COST *and* MANAGEMENT

THE OFFICIAL JOURNAL OF

THE CANADIAN SOCIETY OF

COST ACCOUNTANTS & INDUSTRIAL ENGINEERS

Telephone 2 - 0700

INCORPORATED 1920

HEADQUARTERS. 601-602 MACKAY BUILDING,

66 KING STREET EAST, HAMILTON

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Vol. XVIII. September, 1943 No. 8

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Subscription price to non-members, $5 a year. Single copies 50 cents. Members desiring 5 copies or more of a single issue may obtain them at 25 cents each.

• EDITORIAL •

The New Political Lineup

We have read numerous post mortems on the recent Ontario elections and the Dominion by-elections, none of which, according to our opinion, seem to hit the exact mark.

It is true that governments always have a hard time following either a war or a depression and that in general the voting showed a definite desire for a change, but, for what purpose or rather it would be more accurate to ask, for what cause?

It seems to us that if it showed anything, the voting showed that the majority of the voters were in favour of a "New Deal". In Ontario about 36 per cent felt that the Progressive Conservatives had a program along the right lines, about thirty-three per cent felt that the P-C's did not go far enough, or if they did, they weren't sincere in their promises and the balance of those who voted felt that the Liberal Party had a good record and things, as they were, were good enough.

The fact is however that 69 per cent of those who exercised their franchise (and they are the only ones who count), were very much in favour of a new and a better world in Ontario. True the program of the C.C.F. is, by and large, a Federal Program and many things they advocate can hardly be enacted by a Provincial Government, but, nevertheless the voters showed their preference for the type of world they want and it is a vastly different world to what we have been accustomed to.

It seems to us also that the two old line parties should learn a lesson from this voting and that is that they must be prepared to revamp their programs or platforms to ensure more drastic reforms which are badly needed and in the case of the P-C's in Ontario must implement the promises they made in Col. Drew's twenty-two point platform.

The C.C.F. made a grand showing, far better we think, than they themselves expected and, frankly, in Ontario they are really in the driver's seat.

However there is a risk that they may play politics, precipitating another election before long and which may throw them into power before they are ready for it.

Assuming that they do not play politics and co-operate with Col. Drew in an effort to give Ontario just and efficient government for all the people, we can see a lot of good coming from the recent election.

One thing the last Ontario Parliament lacked was a strong opposition. Now it is there. One thing the C.C.F. has to beware of is the rather insane promises made in some quarters during the Ontario election, for one thing, the promise that everyone would have a minimum salary of $3,000 per year. We do not think the leaders had anything to do with such silly promises but they were made on behalf of candidates. They had better watch out

because such chickens have a habit of coming home to roost. All in all, a large number of the voters showed that they had had enough of bureaucratic government which should be a lesson at Ottawa but we doubt if it will be.

Across the Secretary's Desk

Most of you have by now probably returned from vacation and it is my sincere hope that you derived much benefit from it. I did and am now "rarin' to go" in connection with the hectic days of the 1943-44 season. Since my return I have had several visits from members I see all too seldom. One was from Mr. A. E. Balcombe, of Montreal, whom I had not previously met, and another was from Ernie Langford, the Vice-Chairman of the Fort William-Port Arthur Chapter. Ernie was on a vacation in these parts and unfortunately could not spend a great deal of time with me but I was exceedingly glad to see him and we had a nice chat about chapter affairs and mutual friends at the head of the Lakes. I also received a very nice letter from one of our members near Washington, D.C., in the person of Reid McCrum. Reid is a former Toronto chapter member of long standing and still retains a real interest in the doings of the Society. He informed me that he plans to drop in when he is next in this vicinity and I shall be delighted to see him. It is a remarkable fact but so many of our old members who have moved away from the old scenes still retain a very vital interest in our doings and we are very fortunate that this is so. I am sure that all members will be glad to know that our President, "Hal" Hetherington, is once again back at his desk and apparently quite recovered from his recent illness. I went down to Toronto to see him recently and found him full of vigour and with many plans for the betterment of our Society. "Hal" just bubbles over with enthusiasm concerning the future of the Society and those of you who know him as well as I do will realize that we are indeed a fortunate body to have such a succession of fine fellows at the head of affairs. The Institute of Cost and Management of Quebec, or, if you prefer it, the Montreal Chapter, has suffered a severe loss due to the fact that John W. Christie, L.C.M.I., its newly elected Secretary, has moved to New York. I know the extremely valuable work done by John all through his student days and he has been a tower of strength in Montreal. We wish him all the luck in the world in his new sphere although at the same time we realize that he will be hard to replace. The Montreal boys are going to miss him a lot. Omer Cox, the new Chairman of the Windsor Chapter, has been appointed Chief Accountant of John Wyeth & Bro. at Walkerville and is to be heartily congratulated on this appointment. The Society has few, if any, harder workers than Omer who has done a magnificent job in handling the students there. It was at first feared that he might move from the vicinity of Windsor but, happily for the chapter, he will continue to exert his influence in the border city. It will soon be time to get ready for the forthcoming season in all chapters. We hope you are ready for the task and that the coming season will head the list.

R.D.

Literature Received

Purchasing Under a Costing System.
Aust. Acct., June.
A splendid article containing many interesting sidelights on matters not always given just consideration.

Some Psychological Aspects of Time Study.
Aust. Acct., June.
An article which contains new slants on Time and Motion Study methods as practised in Australia.

Elementary Cost Accounting Principles.
Federal Acct., May and June.
A most interesting article, especially for students of Cost Accounting.

Performance Determines Direct Labour Costs.
Factory Management and Maintenance, July.

A Time Study Refresher.
Factory Management and Maintenance, July.
Two short but exceedingly interesting articles dealing with direct labour costs.

Some Problems of Wartime Industrial Accounting Control.
N.A.C.A., July 1.
While government regulations concerning wartime accounting differ in many respects as between the U.S.A. and Canada, nevertheless this article contains much that should be read by all accountants.

Preparation for Post War Progress.
N.A.C.A., July 5.
One of the best articles we have read on this subject and one which gets down to cases and gives some valuable advice to the Industrial and Cost Accountant regarding planning for the post war period.

New Members

Hamilton Chapter.
P. T. Hadden, Mercury Mills Ltd., Hamilton.

Ottawa Chapter.
A. R. Eckstein, Phillips Electrical Works, Ltd., Brockville.

Personal Notes

Mr. S. F. Saunders, C.A., has, we understand, severed his connection with Riddell, Stead, Graham & Hutchinson, of Toronto, and is now connected with Niagara Dry Ltd., of Niagara Falls, Ontario. His departure means a distinct loss to the Toronto Chapter but we hope a fine addition to the Niagara Chapter.

Mr. W. A. Laughren, a prominent member of the Hamilton Chapter, has been appointed Office Manager of the Cub Aircraft Corp. Ltd., Hamilton, and his many friends wish him well in his new sphere.

Examination Results, 1943

The following are the successful candidates in the spring examinations leading to the degree of R.I.A. and use of the designation, "Registered Industrial and Cost Accountant".

Candidates who have passed all the examinations and have not yet submitted their thesis are urged to do so as quickly as possible.

Unsuccessful candidates who desire to write again if supplementary examinations are held later in the year should make such requests to the Secretary without delay.

FUNDAMENTALS OF COST ACCOUNTING

Passed

Wm. J. Stookes	Hamilton
Francis A. Lee	Hamilton
Kenneth Rusk	Hamilton
J. A. Copland	Windsor
Allan R. Wright	Hamilton
Arlington A. Gabel	Hamilton
Robert E. Wodehouse	Hamilton
W. J. Earle	Toronto
Gordon Mason	Toronto
Jean I. McGeachy	Hamilton
F. C. Ritchey	Hamilton
Robert K. Roy	Hamilton
R. S. McClintock	Toronto
H. G. Wodehouse	Hamilton
Clayton E. Turner	Hamilton
H. J. Henderson	Windsor
A. R. Thompson	Hamilton
Burton M. Smith	Toronto
J. C. Clancy	Hamilton
Louise McEachern	Hamilton
Eric Spearman	Windsor
Andrew Padmos	Riverside, Ont.
E. R. McGee	Windsor
Norman Mathewson	Toronto
Alec Beasley	Hamilton
Jack Kearsley	Toronto
H. E. Adams	Hamilton
W. D. Macklem	Hamilton
T. L. Robinson	Toronto
Lloyd Simenton	Hamilton
Frederick W. Short	Hamilton
W. W. Cottrell	Hamilton
Ida M. McEachern	Hamilton
Kenneth C. Hume	Toronto
Leslie Robertson	Hamilton
R. B. Moran	Toronto

COST AND MANAGEMENT

Gerald James Lawrence	Hamilton
G. S. Malloch	Ottawa
Edgar Burwash	Toronto
Norman R. Barfoot	Galt, Ont.
John V. Jacobson	Toronto
J. B. Cummings	Hamilton
Gordon A. Elliott	St. Catharines

ADVANCED COST ACCOUNTING

Passed

F. A. Lee	Hamilton
R. Spence	Hamilton
John Farrer	Toronto
Arlington A. Gabel	Hamilton
Allan R. Wright	Hamilton
C. R. Thomas	Hamilton
T. E. Madden	Toronto
J. T. Bonham	Toronto
Robert K. Roy	Hamilton
M. Goldhar	Toronto
S. Lewell Heaton	Hamilton
Lorne B. Bonham	Toronto
Robert E. Wodehouse	Hamilton
C. W. Ray	Hamilton
Jack Hutchison	Burlington
Grant McKnight	Toronto
W. R. Ward	Hamilton
Herbert E. Green	Toronto
Cecil W. Kendree	Ottawa
I. Beckerman	Toronto
Omer W. Cox	Windsor
G. F. Kirby	Hamilton
E. R. McGee	Windsor
W. J. Evans	Toronto
Norman H. Duncan	Owen Sound

INDUSTRIAL ORGANIZATION AND MANAGEMENT

W. R. Ward	Hamilton
M. Goldhar	Toronto
Grant McKnight	Toronto
Lorne B. Bonham	Toronto
F. Wilkinson	Toronto
John Farrer, Jr.	Toronto
Victor Downer	Toronto
I. Beckerman	Toronto
F. A. Lee	Hamilton
S. Lewell Heaton	Hamilton
R. Spence	Hamilton
Allan R. Wright	Hamilton
Robert E. Wodehouse	Hamilton

Robert C. Forbes	Windsor
W. J. Masuich	Ottawa
Arlington A. Gabel	Hamilton
G. A. Armstrong	Jarvis
G. Kirby	Hamilton
C. R. Thomas	Hamilton
Jean I. McGeachy	Hamilton
K. H. Gardner	Hamilton
Robert K. Roy	Hamilton

Montreal Golf Tournament

Belting an innocent little white ball all over the bloomin' landscape is fun to certain of our members. It must be! How else to account for a group of otherwise sane cost accountants and industrial managers (if any of them really are sane these days) leaving a nice, pleasantly cool office to swelter 'neath the blisteringest afternoon sky of the summer. Golf to your wandering reporter, seems to be a most inefficient pastime—a game that could be vastly improvd by any industrial engineer. The general idea, after watching a bit, seems to be to get the little white ball from hither to yon wee hole, with the least number of counted swipes. If one really wanted to be efficient about the whole affair, why not carry the ball over and drop it in the hole? Simple ideas like this help some of our members pay the Receiver General.

Back to our subject—the golf tournament. Norm Verity said, "A bit of a struggle around the fairways and bunkers should make us forget some of our business problems for a while and also provide a change which should prove of benefit to all those participating." A goodly number took these words to heart and turned up at the Grovehill Golf Club, Lachine, Que., on the afternoon of Wednesday, 7th July, 1943. Others of us went along just to see what was going to happen—and by gosh it did!

Charlie Dumas, showing that spirit of leadership desirable in a president, walked away with "The Belanger Cup" and the respect of his fellow golf friends. Other prize winners included: N. S. Verity, L. White, E. Burke, Don Peddie, L. MacMillan, A. C. Joncas, E. Beauregard, A. Leveille, H. Whittles and P. Smith. After taking the usual discounts for cash payments, only two of these golfers ran into the 90's; there being a few 80's and a number of 70's. Maybe it pays to take those discounts! We really must mention the sole 18 hole spectator. Bill Marrison didn't even get good wishes for this noble feat—he, methinks, the braver of the lot.

Whilst some were teeing-up (you know those peculiar motions employed), others were downing tea in the refreshing shade of the western verandah (you know what they talked about). We wonder if those two navigator-members finally agreed on "how to work a line of position?" Seems to us as if they were using last year's Nautical Almanac. They can have their Weems'—we prefer H.O. 211. And, besides, a bubble sextant was unheard of in our days before the mast. A squint at the moon was good enough for us.

We had something to eat—that's news these days. During the dinner

prizes were presented; golfers played theoretical golf; navigators navigated; and some members enjoyed themselves. After dinner, ah yes! After dinner, we heard some of those stories told at the Annual Meeting in Windsor—and a few other choice morsels. Need we say any more?

Thesis on Cost Accounting

Prepared and Submitted by
M. C. COUTTS

Nov. 7, 1942

Preface

This description of a Cost Accounting System is based on observation and investigation of the practice of an actual company. Up until a few years ago cost accounting was considered of minor importance in connection with the success of the company. Very little was required except figures for inventory valuation, prices on the products being largely determined by the competitive situation. Since the Gross Margin was relatively large there was little attention paid to actual product costs so that standard costs revised every two or three years served very satisfactorily. With the war actual costs became of greater importance as a result of which the status of the cost department has improved. Naturally the changes in the system are still in the experimental state although reasonably good results are being obtained in the meantime. It is hardly to be expected however that the system will long remain in its present form since increased demands for information are being made daily

M. C. COUTTS,
Nov. 7, 1942.

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COST ACCOUNTING IN AN ELECTRICAL PRODUCTS COMPANY

Introduction

While the company on which this thesis is based manufactures electrical apparatus it is, like many other similar companies, classified as a Metal Trades Industry. The reason for this will be evident when the manufacturing processes are considered. The peace time production of this particular company is meters for the measurement of electrical power and/or energy. At the present time two main war contracts are being handled within the same factory along with a reduced volume of their standard product. In general the war production is somewhat similar to that in their standard product. Like most companies however this company has had to make numerous changes to accommodate the war products—new manufacturing processes have had to be installed and some old processes have had to be expanded; changes have also been necessary in the records and system of the company. From our particular angle the most important change was from a standard cost system to an actual cost system. The war products were of such a nature that accurate estimating was not practicable to the management; consequently the contracts were taken on the basis of a cost plus and ceiling price plan. With this type of contract actual costs were a necessity.

Manufacturing Processes

One of the unique features in the manufacture of electrical products for either household or industrial use is the large number of parts involved. In each of the war contracts for instance over 600 primary parts are used. Naturally the production of these parts involves a large number of processes and an unbelievable number of operations. Manufacture is further complicated by the wide variation in quantities ordered so that there is considerable small quantity work intermingled with a fair amount of highly repetitive work. It is estimated that in the manufacture of parts in the factory for the war products alone approximately 5000 different operations are performed and these mostly on multiple purpose machines. An indication of the operations and processes carried on in the factory is given by the following list of the productive departments.

(1) **Machine Shop** consists of milling machines, profile machines, grinders, drill presses, tapping machines and gear cutting machines.

(2) **Punch Press Department** consists of numerous light and heavy punch presses in connection with the forming of metal parts. Bakelite moulding is also done on a small scale in this department.

(3) **Turret Lathes Department**: several turret lathes of various sizes and makes are run in this department.

(4) **Automatics Department** consists of small automatic screw machines (mainly No. 0 and No. 00 machines) for the manufacture in large

quantities of relatively small parts such as rivets, shafts, nuts and screws.

(5) **Special Jobs Shop** consists of small engine lathes, dual saws, drill presses, polishing wheels and numerous work benches for hand work in connection with the assembly, fitting and running in of accurate complex assemblies.

(6) **Plating Department** in which practically every plating process is carried on in a modest way; for example, nickel, copper, tin or zinc plating.

(7) **Painting Department**: here small metal parts, punch press parts, and castings are either spray or dip painted; both air dry and baking finishes are applied. The impregnation of coils is also done in this department.

(8) **Detail Assembly Department**: in this department electric coils are wound and assembled into transformers and other electrical apparatus. Sub-assemblies of parts and small final assemblies are produced on benches in this department as well.

(9) **Assembly Department**: final assembly of standard products and major war products is performed on assembly lines and tables within this department.

(10) **Test Department**: from final assembly all products flow to the test department for a final test and inspection in accordance with engineering specifications.

In these productive departments the present personnel totals approximately 450 including 100 or so on the night shift.

Factory Organization

The Factory Manager, along with the Sales Maanger, Comptroller and Chief Engineer, reports to the President and General Manager. The Factory Manager has reporting to him a General Superintendent with an Assistant Superintendent in especial charge of tool design, tool manufacture, methods, time study and factory timekeeping. Also reporting to the Factory Manager is the Manager of the Purchasing Department, the Production Manager and the Inspection Engineer. The Factory Accounting consisting of cost clerks and cost investigators comes under the jurisdiction of the Comptroller and Secretary Treasurer.

Production Planning System

Since costs in this company are an offshoot of the production planning system it is necessary to have an understanding of this latter system in order to trace through the costing procedure. When an order for a new product is received in the Sales Department this order along with any correspondence relating to it is sent to the Engineering Department—any drawings received from the customer or a sample of the apparatus would also go to the Engineer.

From the information or samples sent in the Engineer in charge of the job makes up part and assembly drawings for shop use. All parts, sub-assemblies and final assemblies are given designating numbers which correspond to the drawing numbers. The final product required is given a specification number to which all parts, sub-assemblies and assemblies required are related through the Engineering Specification Sheet. The specification number of the apparatus is entered on the Sales Order by the Engineer and

the Sales Order is typed out calling for the apparatus required along with the Specification Number. This Factory Order is of such a set up that Invoice Sheets are made up at the same time for billing at the time of shipment.

A copy of the Factory Order is sent to the Production Department of the factory as their authorization to proceed with purchase and manufacture of the apparatus to meet the delivery date required. From the Engineering Department the Production Department obtain copies of the drawings as they are issued. A copy of the Specification Sheet made up by the Engineer also goes to the Production Department. The standard form used for this Specification is number C-75, a copy of which is included with this report. The information given is as follows:

(1) Part number or specification number.
(2) Part or apparatus name.
(3) Issue date.
(4) Listing of all parts, sub-assemblies or assemblies going into the finished apparatus.
    (a) Item number.
    (b) Number per hundred required.
    (c) Part or assembly description.
    (d) Part or assembly number.
    (e) Material used to manufacture the part.
    (f) Quantity of material required per hundred pieces.
    (g) Specification or code number of the material or raw part used.

Since this Specification Sheet indicates all the raw materials required to manufacture the apparatus along with the amount needed for one hundred of the apparatus the Production Department are enabled to put through requisitions to the Purchasing Department for all outside purchases.

The Specifications for the parts along with the drawings also go to the tool design group. Here all the tools required are laid out along with the necessary gauges or fixtures. Like the parts, each tool, gauge and fixture is given a designating number. In co-operation with the tool design group the methods and planning men lay out the manufacturing operations to be performed in the factory in the production of each part. The planning men then issue Set Up Instructions for each part to be produced. The Standard form used for this purpose is number C-367 a copy of which is attached to this report. The information given on these instructions is as follows:

(1) Part number or specification number.
(2) Part or apparatus name.
(3) Date.
(4) Listing of all operations.
    (a) Operation number.
    (b) Tool post position.
    (c) Description of operation.
    (d) Department number in which operation performed.
    (e) Tool and gauge numbers.
    (f) Location on tool or gauge.
    (g) Name of tool or gauge.
    (h) Machine number, speed, feed, etc.

In this way every operation to be performed on each and every part produced in the factory is definitely specified in the planning stage along with the tools and equipment required to carry out the operations.

From the Specification Sheet and the Set Up Sheet for each part or apparatus a master ditto copy of the Manufacturing Order is typed out by the Production Department. Standard form number C-352 is used for the Manufacturing Order; a copy of this form is included with this report. The information included is as follows:

(1) Part or Specification number.
(2) Part or apparatus name.
(3) List of raw materials, raw parts and finished parts required:
    (a) Amount required.
    (b) Amount per hundred pieces.
    (c) Material or part description.
    (d) Part number or material specification number.
(4) List of operations necessary to produce the part along with departmental routing.
    (a) Operation number.
    (b) Operation name.
    (c) Department number where operations to be performed.
    (d) Labour grade number indicating the class of operator required.
    (e) Departmental routing.

Shop orders for production runs are made out from this master copy of the Manufacturing Order. When the shop order is to be issued the master copy for the particular part or parts required is withdrawn from the files, the order date, the quantity to be produced and the order number is typed in and the required number of copies are run off on the Ditto Machine. Regular shop orders issued to the shop are designated by the part number along with a letter number to indicate the particular issue. The use of the Ditto Machine allows the Finished Stores Delivery Ticket blank (form number C-353), the Finished Material Requisition blank (form number C-355) and the Manufacturing Tracer (form C-354) also to be run off for the Production Department. The Finished Stores Delivery Ticket is distributed to the Control Centres in the shop for use in recording deliveries made to stores on the parts produced on the particular order. The Finished Material Requisiton lists all parts that are to be drawn from finished stores for final assembly and is used to withdraw the parts when they are required. The Manufacturing Tracer gives the part number, part name, order issue and all operation information of the Manufacturing Order: it is used to accompany the work in its progress throughout the shop for identification purposes mainly.

When the first shop order to the factory is run off the Master Manufacturing Order the Parts Cost Record Sheet form C-356 is run off for the Cost Department. Likewise if a change is made in the Manufacturing Order for any reason a revised copy of this Parts Cost Sheet is sent to the Cost Department with the issue of the next order. The information transferred to the Parts Cost Record Sheet is as follows:

(1) Part number or Specification number.
(2) Part or apparatus name.

(3) List of parts, or raw materials used to manufacture this particular article:
   (a) Amount (piece, pounds, or feet, etc.) required per hundred parts.
   (b) Material or part name.
   (c) Material specification number or part number.

(4) List of operations required to produce the part or apparatus:
   (a) Operation number.
   (b) Operation name.
   (c Department number in which operation is performed.
   (d) Labour grade number.

For parts that are to be purchased complete and used with no further processing in our plant the Production Department supply the Cost Department with a copy of the Parts Cost Record giving this information. In this way the Cost Department has available all the up to date information in connection with each and every part number in the company. With this information as a starting point the Cost Accountant is able to make the necessary arrangements to accumulate all cost data for costing the parts and finished products.

The foregoing outline of the production planning system is followed throughout the factory for the greater part of the production. Like other companies, however, there are cases where the quantity order is such or the annual production is so small that it is not considered economical to do all this preplanning. In these few cases special orders are issued under a separate series of numbers merely calling for the production of such and such an item or piece of apparatus. Most of these jobs are performed in the Special Jobs Department. Here the foreman takes the engineer's drawings and lays out the work to produce the product required. It is felt that very little control can be exercised over these special orders and their number is kept to the minimum. A copy of each special order comes to the Cost Department of course. To assist in their detection and separation a separate colour form is used for all special orders.

Costing Systems.

1. **Standard Costs.** Since the majority of the parts used in connection with the production of meters, the standard product of the company, are made with special tools, jigs, and fixtures in standard operations and are also made from standard materials these parts are costed by standard cost methods. The setting up of the standards and the system of obtaining the variances are outlined below for each element of cost.

   (a) **Labour Cost Standards.** Through actual time studies the majority of the operations on the production of the parts have been given time standards. On all long run jobs an operation survey is made before setting the time standard in order that the one best method of doing the job may be used. Along with the time study and the operation survey the job is rated in comparison with other jobs in the factory. A job survey made in the factory a few years ago yielded the information and data required to classify and code all jobs. The basis used was that recommended by the Metal Trades Association. Through a comparison of rates paid by various companies in the district for comparable jobs and the points assigned

to these jobs a wage scale is set up correlating hourly rates with jobs through the point method. A code book issued by the Rate Department classifies all the operations in all departments and gives the hourly rate to be paid for each classification. In this way knowing the code for the job under consideration the hourly rate is easily learned. Each operation is given a specific number which may be used for a variety of parts providing the conditions of the operation survey and job study are identical on the particular parts. The results of each time study are summarized and recorded on a Rate Card form C-371; the following information is called for on this form:

(1) Operation number and name.
(2) Account number—a different account number is used for bonus jobs than for day work jobs: these account numbers are also specific for major product groups.
(3) Department number.
(4) Part name and number—also other parts to which this specific information applies.
(5) Standard pieces per hour and allowed hours per hundred pieces.
(6) Occupational code number and date job study made.
(7) Standard cost per hundred pieces.

From these rate cards the standard cost for each operation is obtained and recorded in the Parts Cost Record.

Where operations have not been studied a standard is set on the basis of past performance records for cost purposes. An operation rate card is also made up for these cases in order to record the book standard for accumulating the labour variance. In this way each operation is given a standard cost; these standards are revised once in two or three years depending upon the availability of time and personnel and the rate of change in conditions. When a standard for new piece is being set up in between general changes the wage rates in effect at the date of the last change are used.

(b) **Raw Material Standards.** All raw materials used in production are given a code number and where raw materials enter into the production of a part the code number of the material required is specified by the engineering department along with the amount of the material required to make one hundred pieces. Through tests conducted on the first production runs the amount of natural scrap obtained in the manufacture of each part is learned and the weight of this is also specified on the parts cost record. The specified amount of material per hundred pieces includes a small percentage for scrap parts; this may vary from 2 to 10% depending upon the nature of the part. Standard costs for each coded raw material are set by the purchasing department having in mind the possible change in price that may occur within the next few years. In every case of course the standard is set on the basis of the laid down cost. In the case of special purchased parts the standard is set on the basis of the latest invoice on hand at the time the standard is set. With the variation that was taking place in the exchange rate at the time the standards were last set a decision

was made to leave the exchange out of the standard and to collect it in a separate account to be used as a material cost variance.

From the standard rates for raw materials and parts and knowing the amount of material required in each part the standard material cost of the part is obtained. The natural scrap is priced at standard and an allowance is made in the cost of each part for this amount.

(c) **Standard Cost Form.** The standards arrived at in the preceding manner are recorded and maintained in the Parts Cost Record Form No. C-356.

2. **Actual Costs.** The war jobs are costed on the basis of the actual dollar outlay accumulated on each job order; hence a job cost system is used. Actual costs were considered necessary in view of the lack of experience on the production of the war products. All parts were of English design and hence had to be made, at least initially, according to English standards and English methods of manufacture. While many of the operations required were similar to those performed on our standard product many of them were new to the factory; at the same time many of the materials from which the parts had to be made were of English specification in the use of which the factory had no experience. It was decided that standards set up in this case would be wide of the mark and no doubt useless. The present system has been in use over two years and has fully justified the extra cost involved.

Original Records.

1. **Labour Accounting.**

(a) **Wage Payment Systems.** Incentive systems as well as day work are in use for the payment of productive workers. On the incentive side some of the operations are paid for on a straight piecework basis although by far the majority of them are paid for on a standard time system.

In the standard time system two hourly rates are provided for each coded and studies job—a minimum rate and a basic rate; the minimum is set at 90% of the basic rate. For each job done the actual time taken is obtained and calculated along with the time that should have been taken knowing the time study rate per hour and the number of pieces done. On the basis of the comparison between the actual time taken and the time that should have been taken each job is classified and paid for. If the actual time is equal to or less than the standard time the operatior receives the basic rate for the job and his total earnings are calculated by multiplying the standard hours to complete the job by the basic rate. On the other hand, if the actual hours exceed the standard hours for the job the operator is paid at the minimum hourly rate established for the job and his earnings are calculated by multiplying the actual hours to complete the job by this minimum rate. At the present time due to the severe competition for operators the minimum rate has been raised to equal the basic rate as a temporary measure for the duration of the war; in all other respects the system remains as outlined.

All new operators are hired at a day rate with the understand-

ing that if they make the time study rate they will be paid at the basic hourly rate for the standard time. At the end of 3 months each operator is guaranteed the minimum for all jobs. The day work rates for each classified job are given as a minimum and a maximum for that classification; in this way an operator working on a particular class of work may have his day rate raised from time to time from the minimum to the maximum. All workers regularly on indirect labour are paid at day rates. Likewise direct workers going onto an indirect labour job are paid at their day rate such as for instance when they go on idle time. Hence it is necessary to have a day work rate for each operator. For regular direct labour workers the day rate is usually less than the minimum to provide incentive for the standard time jobs. When a direct labour operator goes on an indirect labour account the nature of the work of which is similar to his productive labour he is paid the basic rate for the actual time; this applies for instance to repair work on defective parts and special work for the Engineering Department. When an experienced productive operator is used to instruct a new operator he is paid at his average earnings rate.

The time spent for the setting up of a machine for a particular job may be either direct labour or indirect labour. In some cases an allowance is made in the time study rate for the time required to do the set up; this applies only to those jobs where the operator can do his own setting up as in the case of shearing steel sheet or spray painting. In all other cases set up is treated as indirect labour and is paid for at a day rate.

(b) **Job Tickets.** Much of the accounting system in the company is built around the use of I.B.M. Hollerith Machines: this is particularly true of the Payroll and Labour Analysis. Job tickets IBM No. 81486 for the Hollerith machines are used to accumulate all the information on each job for Payroll and Labour distribution purposes. The essential information called for on this card is as follows:

(1) Job number and name.
  (a) Part number.
  (b) Order letter.
  (c) Operation number and name.
(2) Operation number and name—male or female.
(3) Department number and account number.
(4) Labour grade and standard time information.
  (a) Labour grade.
  (b) Allowed hours per hundred.
  (c) Actual hourly rate.
  (d) Standard piece rate.
(5) Payroll information.
  (a) Pieces finished.
  (b) Actual hours on job.
  (c) Standard hours for job.
  (d) Actual labour for job.
  (e) Standard labour for job.

To provide for the accumulation of this information control centres are located at four central points in the factory. Each centre consists of tables with provisions in their top for the maintenance of a rate card and a partially completed payroll card for each operation performed on each and every part served by the centre; it is estimated that the total number of active rate cards approximates 50,000. A Stromberg job recorded number 35 is used for stamping the starting and finishing time on a job ticket.

When the foreman is ready to start a job or to have an operator go on a particular job he gives the operator a copy of the Manufacturing Tracer for the particular part and order number pointing out the operation he wants performed. The operator proceeds to the Control centre asking the time clerk to clock him on this particular operation and job. From the operation number and part number on the tracer the time clerk locates a partially completed job ticket in his rate card file. The time clerk fills in the order letter and the operator's name and number along with the numbers 1 or 2 to indicate male or female operator. The time clerk punches the starting time on the card, calls off to the operator the basic hourly rate for the job along with the standard number of pieces per hour and deposits the payroll card in the operator's card rack located at the Control centre. When the job is complete the operator counts the quantity done, gets the tracer from the foreman for the next job and reports to the time centre where his finish time is recorded on his job ticket along with his report of the number of pieces finished. Partial jobs are handled the same way the count being recorded on the back of the card and totalled when complete. Day work jobs are handled in the same manner except that no standards are used. At the end of a pay period, i.e., every other Wednesday at 5:30 p.m., all payroll cards are clocked off the jobs and the counts obtained from the operators so that all earnings up to that time may be calculated. Operators working on indirect labour jobs are clocked on the payroll ticket at the beginning of the pay period and off again at the end provided they have been on the same account number continuously; in this case, of course, no part numbers will be shown.

(c) **Clock Cards.** Each and every employee of the company is given a clock card to punch on entering and leaving the factory and in and out at noon time. Clock cards of the factory workers are examined each morning by the chief time clerk; if an employee is not at work by 3 minutes after starting time his card is removed from the rack and given to the time clerk at the control centre to which the operator normally reports. In this way a check is kept on each operator's time to see that his job tickets total up to the actual time he was in the factory working.

(d) **Payroll.** At the end of each pay period all job tickets and clock cards are accumulated and each job ticket completed with the necessary calculations. At this time the chief time clerk examines all job tickets and investigates any tickets which appear out of line in any way. In this way an attempt is made to see that the informa-

tion is complete and accurate on each and every card before the cards go to the Tabulating Department.

The job tickets are key punched and gang checked on the basis of labour grades. A listing is then made by the machines of the jobs done by each employee number and the actual labour for each operator is totalled; at the same time the total of his actual hours for the pay period as given by his job ticket is obtained. This listing is then checked with the total hours given by the employees clock cards and any discrepancies are investigated. A pay roll clerk then adds for each employee the cost of living bonus payable on his earnings as of the previous pay, i.e., the cost of living bonus is one pay period behind. This gives the employees gross earnings. National Defence Tax is deducted on the basis of information maintained on the personnel card for each employee. From a coded booklet giving days worked and classified pay period earnings the unemployment insurance deduction is obtained (days worked for each employee for this purpose are marked on his clock card by a time clerk). All deductions are written on the sheet of original listing and from these an employee payroll card is punched. By running these through the Hollerith Machines the gross earnings, deductions and net earnings are recorded by clock numbers; from the totals obtained at this time the factory payroll is determined. A duplicate of this listing is perforated between clock numbers so that the strips can be torn apart and distributed to the operators. The job outlined in this section takes the time of approximately 6 people for one week, the pay slips usually being distributed within a week of the close of the pay period. Employees are paid on Friday of the week following the close of the pay period so that each operator has a chance to have his pay checked if necessary before payment is made. From the original listing of employees earnings and deductions a pay envelope for each operator is typed up giving his name, clock number and net earnings. These envelopes are sent to the bank along with a cheque for the total amount. At the bank each envelope is filled as called for and held for the employee. The employee obtains his money from the bank upon the presentation of his pay slip correctly signed.

(e) **Direct Labour Variance and Distribution:** After using the payroll cards for calculating employees earnings the direct and indirect job tickets are separated through the account numbers. The direct labour tickets are further segregated according to the major product groupings, regular instrument work and the two major war products. With the meter cards (product costing on standard cost system) the total actual and the total standard labour figures are obtained.

For each of the major war contracts a listing is made grouped under part numbers giving for each operation the shop order number, operator number, pieces produced, hours worked, actual payment dollars and account number.

Entries are made, to the Labour control accounts for the

products, of direct labour dollars obtained from these reports. The reports are then turned over to the cost clerks for product costing.

2. **Material Accounting.**

(a) **Purchasing.** Direct materials are requisitioned on the Purchasing Department by the Production Department. The requisitions are numbered serially and are signed by the Materials Control Clerk. On stock items for regular production requisitions are issued when stock reaches a predetermined minimum. On the war jobs requisitions are issued on the basis of orders received plus a nominal allowance for loss. On new jobs the specification of the material required for each part is laid down in the Specification sheet form number C-375 issued by the engineer in charge of the product. At the present time material specifications are being prepared for all special materials; where possible all materials are purchased according to standard American specifications. All materials used are given a code number by the Engineering Department. This number is specific as to chemical composition, physical properties, size, finish, shape and length. Perpetual inventory records are maintained in the Production Department for all direct materials by code numbers or part numbers.

Where possible quotations are obtained although at the present time by far the larger percentage of the orders are issued with no price specified. This is considered satisfactory by the Purchasing Agent since in most cases the company buys from firms with whom they have dealt for many years. Purchase orders are issued in serial number order and are signed only by the Purchasing Agent. All Purchase orders issued are entered on a Purchase card maintained in Kardex cabinets under code numbers or part numbers. A copy of the Purchase order goes to the receiving department and two copies are filed in the Purchase office.

When the material is received it is checked by the receiving inspector for quality according to drawing or specification and the quantity is checked by the receiver with that specified on the purchase order. A receiving slip, numbered consecutively, is made out by the receiver and the original and a copy is sent through to the Purchasing Department. A purchase clerk attaches the original receiving slip to one copy of the purchase order and holds the two for the invoice: the other copy of the receiving slip after passing through the perpetual inventory records is attached to the serially filed copy of the purchase order for reference purposes.

All invoices come into the general office where they are stamped as to the date received. A rubber stamp is then used on the face of the invoice calling for the following information:

Mat'l Rec'd Date	Passed for credit
Rec. Slip No.	To Purch. Dept.
Price O.K.	Ret'd
Extension O.K.	P. J. Folio
Used for	Charge to

On each invoice the accountant indicates the account number; the invoice is then sent to the accounts payable clerk who enters it in

the Purchase Journal giving the date, the name of the company and the amount owing along with a second entry of the amount under the control account number. A notation is also made of the terms of payment and if cash discount is to be taken the invoice is stamped "Pay Ahead" to indicate preferential treatment. The invoice is then sent to the Purchasing Department. A clerk in the Purchasing Department attaches a copy of the Purchase Order and receiving slip to the invoice, checks the price, the extension and indicates the product for which the material will be used. The invoices are entered on the purchase records after which they are passed to the Cost Department. In the Cost Department they are divided according to the product for which the material was purchased dealing only with productive materials. Where the material is for the standard product the standard rate used in the cost records is used for extension with the quantity of the item billed and this standard extension marked on the face of the invoice. Where the material is for war products the actual laid down cost of each item is calculated taking into account exchange, duty, war tax and freight. Each item on the invoice is then entered in the Cost Purchase Invoice Book. Form number C-366 is used in this invoice book. The information recorded is as follows:

1. Material description and part or code number.
2. Invoice date, supplier and purchase order number.
3. Quantity received and cumulative total.
4. Invoice value and cumulative value.
5. Cost per hundred units.
6. Average cost per hundred units.
7. Remarks.

In this way a running average cost of all purchases to date on each and every part and material is kept for the war jobs. After the cost clerk has dealt with the invoices in the above manner they are returned to the accounts payable clerk.

On payment of each invoice the cheque number and date is written in the purchase journal the invoice is marked "Paid" and then filed. Each month the invoices on productive materials for the product groups are totalled: for the standard product figures for actual and standard are obtained while for the war products actual figures are obtained. From these entries are made to the General Ledger showing charges to Material inventory with corresponding credit to cash and or accounts payable and either a debit or credit to Material Variance Account on the standard products. (Inventory on the standard product going in at standard cost.)

(b) **Stores Requisitions.** No material is supposed to be taken from stores without a material requisition. When the foreman is ready to start a job he uses his copy of the Manufacturing Tracer for the job to secure the material requisition from the Control Centre clerk. All writing is done by the clerk at the centre; the quantity required according to the specification and the number of pieces ordered is also calculated by this clerk. The Requisition form used is number C-299. The essential information given on the requisition

is as follows:

1. Material or part name and number.
2. Material size.
3. Dept. to which material delivered along with product name for which used.
4. Order number.
5. Amount required and amount delivered.
6. Date delivered, filled by and authorized by.

The stores clerk weighs or counts the material to deliver as nearly as possible the amount required but in all cases he marks on the requisition the amount delivered along with the date and his signature. The requisition may be authorized by the foreman or production clerk. From the stores department the filled requisition form is sent to the Production Office for entry on the perpetual inventory records. Where necessary the production clerk checks the requisition to complete the information. After entry by this clerk the requisitions are passed to the Cost Department where the material delivered is entered in the cost ledger sheet for the particular orders concerned on war jobs. All requisitions are then filed by order number for reference purposes.

Material in any department in excess of that required is returned to raw stores on a credit slip; this is a copy of the same requisition except in a red colour instead of white.

If additional material over that specified is required the requisition made out at the Control Centre must bear the signature of the Production Manager in order that the necessary action may be taken to replace the stock and at the same time reduced the tendency to use more material than actually necessary.

Originally requisitions for production materials were extended at cost and totalled for each month in order to make a transfer from Raw Material Control to Process Inventory Control. This past year, however, this practise was dropped, Raw Materials and Process Materials being considered one control account. This has saved considerable clerical work although a certain amount of control may have been lost.

Cost of Sales Determination.

1. **Material and Labour.**

(a) **Standard Costs and Variances.** As indicated previously cost of sales figures on the standard products are built up on the basis of standard figures so that direct material and direct labour variance accounts have to be used. The process inventory control is built up of material and labour purchases at standard cost figures. Each year, and throughout the year if necessary, the variances to be expected are considered. On the basis of the best estimate as to the possible future change in actual costs as compared with standard a percentage figure is decided upon for both material and labour. These percentage figures are used in taking material and labour out of process inventory as either an addition or a subtraction to the standard figures. Since the last cost standards were set up in 1938 the recent trend of actual costs has been to exceed the

standards; hence the standard value of cost of sales has been increased by a percentage to bring this figure more into line with actual. The corresponding monthly credit on these entries is as follows:

Standard value of cost of sales to process inventory.
Percentage increase on cost of sales to variance accounts labour and/or material.

In this way the dollar value in the variance account is supposed to be kept near a minimum. If these variances begin to accumulate markedly either way the percentages may be revised on the basis of investigation. In the monthly statements the balances in the variance accounts are considered as adjustments to the inventory accounts. At the end of the year, however, an attempt is made to divide the total net variance for the year between cost of sales and inventory in order that both accounts may be shown at an estimated actual value. A percentage figure is used on standard material and labour from the physical inventory to adjust to actual; the percentages used are of course only estimates made in the light of all known facts and particularly with regard to market conditions. Hollerith machines make the use of standard costs for cost of sales purpose relatively simple and easy to handle; at the same time they facilitate the preparation of reports on cost of sales by sales product classifications.

(b) **Actual Costs.** As previously indicated actual job costs are kept on the war orders. Cost Ledger Sheet number C-368 is used for accumulating job costs. The primary information called for on this form is as follows:

(1) Orders issued.
  (a) Order number.
  (b) Quantity ordered.
  (c) Order date.
(2) Material cost charges.
  (a) Item requisitioned—code or part number.
  (b) Quantity requisitioned.
  (c) Cost per hundred of items requisitioned.
  (d) Total material cost.
(3) Labour charges.
  (a) Pay period date.
  (b) Total labour charged.
(4) Deliveries of parts to Finished Stores.
  (a) Quantity and date.
(5) Unit Costs.
  (a) Material cost per hundred.
  (b) Labour cost per hundred.

When an order is issued to the shop by the production department one copy is given the cost department. These shop orders are entered on the Ledger Sheet for the part number to be produced giving the order date and the quantity ordered. From the raw material requisitions received daily from the Production and Stores department entries are made giving the code or part number of

the material used along with the amount disbursed on the order. For reference purposes the date of the delivery is also recorded on the Ledger Sheet. Credits on material returned to stores are handled in the same way, care being taken to see that an order is not costed until any credits due on the material have been received. From the semi-monthly Hollerith listing of labour charges to orders entries are made in the total labour column along with the pay period date. On the satisfactory completion of parts in the factory they are delivered to finished stores on form number C-353 as indicated before. Here the quantity received is double checked by count or weight: the delivery slip is signed by receiver in stores and sent through to the production department for use in connection with the perpetual inventory records. From the production department the delivery slips are forwarded to the cost department where the quantity and delivery date is entered on the respective Ledger Sheet. Each order is left open until the order has been completed as indicated by the notation "Complete" on the final delivery slip. Labour is accumulated until the pay period including the date of the last delivery stores has been entered. The cost of the raw material used is taken from the cost department purchase journal; the cost price used is the average of material purchases. The particular average is that existing at the date immediately prior to the date work was commenced in the shop. On the completion of the order the total material and labour costs are thus obtained. Using the total pieces delivered a material cost per hundred and a labour cost per hundred is obtained for the part. As additional orders for the same part are completed the average material and labour cost of the production is obtained. For auditing purposes an average cost of the production for the fiscal year is obtained considering those orders completed within the period. Where wide variations are obtained in the cost of the individual orders the cost clerk carries out the investigation necessary to assure himself that the costs represent the actual physical situation. Errors occasionally creep in through incorrect distribution of labour, material or deliveries to order numbers on the part of the factory peronnel; in some cases the number given is incorrect while in others the order letter given is incorrect. Trouble also occurs at times through failure of the factory personnel to secure material requisitions or put through the necessary delivery slips. In all these cases it is necessary for the cost clerk to examine the actual situation in order to supply reasonably accurate figures.

Actual assembly costs are obtained through the use of the Parts Cost Record form number C-356 which enumerates the parts along with the number of each required in the assembly. Unit parts costs are taken as the latest actual average on the cost ledger sheet if the parts are manufactured in the plant. For purchased parts the average cost existing at the date of costing the assembly is used from the department purchase journal. The labour in connetion with final assembly is accumulated on the job cost sheets as for any unit part; likewise with deliveries of the assembly. In

this way the unit cost of assembling is obtained and added into the total cost of the finished device. It is recognized that in costing an assembly in this manner an assumption is made that parts withdrawn from finished stores for assembly into a complete device are used with no loss. This of course is only partially true and necessitates a physical check on items of large dollar value with a consequent readjustment of the assembly cost. In our case this method has proved satisfactory to date.

From the actual cost figures on articles sold Hollerith cards are punched giving labour and material cost for each device. Cost of Sales is then obtained in the same way as with standard cost figures except that no allowance is made through variances. When a revised cost is obtained the previous Hollerith card is destroyed and a new one made up. In the initial stages particularly the variations occurring in actual costs are quite noticeable so that frequent revision is necessary.

Since material and labour control accounts are maintained for each of the major war contracts on the basis of actual purchases withdrawals are also made on the basis of actual costs going into cost of sales as determined according to the previous paragraphs. In our particular case we have found that variations in unit costs on the actual basis have been so severe as to require a major adjustment of the years cost of sales at the year end for our annual statement. Inventory valuation the past year end was on the basis of actual average cost of production for the year. In this way reasonably close reconciliation was made between the physical inventory and the book figures. Some of the major causes of our actual cost variations are as follows:

(a) Inefficient manufacture caused by change of personnel—in one specific example the unit labour cost of one order performed by new help as against two previous orders for the same part performed by reasonably experienced help was in the ratio of 1.8 to 1.

(b) The necessity of doing one order on turret lathes as against doing previous orders on an automatic screw machine. This necessity is frequently brought about by the quantities required and occasionally because production schedules may not allow breaking in on automatic screw machine production.

(c) The fact that one time an order may be manufactured in our factory while the next time production schedules may necessitate our purchase of the part from an outside firm while we supply the material. At the present time little control can be exercised over the price of an outside supplier in these cases with the result that unusual variations may easily occur.

In our case the wide variations in actual costs between orders makes the use of actual costs for profit and loss determination very difficult because of the necessity of an overall year adjustment to cost of sales and in many cases the revision of physical inventory unit costs to the same basis as cost of sales. The system however has the definite advantage of accumulating actual expenditures on cost

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plus war contracts in such an orderly fashion that checking by Government cost accountants is facilitated thus assisting satisfactory recovery of all company expenditures on the war contracts.

2. **Factory Overhead.**

A condensed list of the factory expense accounts used is as follows:

Wages and Salaries.
- General salaries.
- Cost of Living Bonus.
- Draughting.
- Engineering.
- Maintenance.
- Manufacturing Development Labour.
- Non-productive labour.
- Printing.
- Repairs to product.

Supplies.
- Factory.
- Manufacturing office.
- Office.
- Stationery and printing.
- Material.
- Painting
- Plating.
- Tool Room.

General.
- Factory maintenance and repair materials.
- Fuel oil.
- Gas.
- Heating.
- Incidentals.
- Insurance.
- Postage.
- Power and Light.
- Repairs to Product.
- Replacement of defective parts:
- Salvage and loss parts.
- Scrap material sales (credit).
- Special development and experimental.
- Stamp Tax.
- Storage.
- Taxes—municipal.
- Telephone and Telegraph.
- Travelling.
- Unemployment insurance.
- Water.
- Workmen's compensation insurance.

When the war contracts were accepted it was decided that special accounts would have to be set up in some cases to collect special and extraordinary expenses applying to each of these contracts alone. This applied particularly to numerous of the indirect

labour accounts namely engineering, draughting, tool design labour, special inspection labour and labour in connection with the setting up of machines for jobs. Through these special accounts the special charges applying to each of the three types of products flowing through the plant were obtained. Since all three product groups passed through all departments it was decided that all factory expense apart from the special ones charged to specific product groups should be divided between the product groups in proportion to actual direct labour dollars. These expenses were called prime expenses and their percentage on total direct labour dollars was called the prime burden rate. The special expenses for each product group expressed as a percentage of the direct labour dollars for the respective groups gave the special burden rate applicable to the product group. The total burden rate applying to a product group is obtained by totalling the prime burden rate and the special burden rate applying to that group. In this way three different burden rates were used each applying to the direct labour dollars in the items within the three product groups. During the first year of operation on the war contracts estimated overhead rates were used. On the basis of the first full year of operations, however (1941), actual overhead rates were established. The actual rates for the previous year are used in the preparation of the monthly statement throughout the year. The over or under absorbed burden on the basis of these rates and actual expenses is built up through the year in burden variance account; over absorbed burden is reserved for an under absorption later on in the year; if the balance represents an under absorption it is included in the cost of sales for the year to date. At the year end the burden rates are again adjusted to the actual for the year.

Expense Account Details:

1. General salaries consists of one-third of the salaries of the company officers the balance being divided equally between selling and administrative expense.
2. Non-productive labour is the largest single dollar value expense item (37% of the total factory expenses in 1941); the dollars in this account are made up of the wages and salaries of the floor boys, storekeepers, stores clerks, stock chasers, production department, purchasing department and factory accounting department personnel, inspectors, set up men, foremen, supervisors, time clerks and time study men.
3. Repairs to product labour consists of wages paid in connection with the reworking of material or parts to make them usable.
4. All purchases for the account factory supplies consisting of small tools such as drills, taps, dies, countersinks, milling cutters, etc., and miscellaneous supplies such as oil, grease and cleaning fluid are considered as expense in the month in which they are received and paid for. A few years ago supplies were inventoried; the present practice was adopted to reduce clerical work.
5. Material supplies consists of items going into the manufacture of

the product and traceable in the device as shipped such as solder, electric wire and winding tape.

6. Painting and Plating—the materials required for painting and plating are considered as indirect expenses rather than as direct materials traceable to a part or product. To date practically all products sold were painted as well as plated so that no great error occurred in handling these materials in this manner.
7. Scrap material sales. It was not considered practicable to segregate the natural scrap to various jobs or even to the three groups of products. The big difficulty is due to the fact that any machine may do a job for each of the product groups following one another and it would not be easy to provide accommodations to accumulate scrap for each type of material for each product. Handling these sales as a credit to the prime overhead distributes the value on the basis of direct labour dollars. While this is questionable as a means of crediting each group with its correct value the basis has been tested two or three times and found reasonably acceptable.

Statements and Control Reports.

With each pay period a summary report is prepared by the Tabulating Department of the labour distribution by account numbers for each department. From this summary a condensation is made for the Factory Manager and the Superintendent giving the following information:

By departments (productive):

Dollars spent:

(1) For supervision and set up.
(2) For floor boys, apprentices and services.
(3) For idle time and instructing operators.
(4) For repairs to product and small tools.
(5) For all indirect labour.
(6) For all direct labour.
(7) For total labour.
(8) For piece work and standard time labour.

Comparative ratios on:

(1) Indirect labour cost per productive hour.
(2) Percentage incentive labour to direct labour.
(3) Percentage direct labour to total labour.

With a total for the factory productive departments. This report is reviewed at the end of each pay period with the Divisional foremen and an attempt made to bring the high departments into line.

Every two pay periods the Salvage Loss tickets issued for scrapped parts in the Standard cost group are costed and extended to give the total scrap loss for the period. This loss is given in material and labour figures to which normal overhead for the particular product is added. The total loss is included as a special overhead charge to the standard cost products. This figure is also broken down by departments and a summary report prepared for the factory manager giving by departments the dollar loss and the dollar loss per productive operator hour. This report is also reviewed with the divisional foremen in an attempt to bring the total loss down.

A complete set of financial statements is prepared monthly as follows:

(1) Balance Sheet.

(2) Profit or Loss statement for month and cumulative to date.
(3) Inventory by product groups and elements of cost.
(4) Schedule of cost of sales.
(5) Sales or selling expense by territories.
(6) Factory expense schedule for month and cumulative to date.
(7) Factory overhead calculations.
(8) Administrative expense schedule for month and cumulative to date.
(9) Factory payroll giving total dollars, total personnel hourly and salaried males and females along with process hours.

While the company has not yet made use of a budget in any form it is expected that within the near future action to this end will have to be initiated.

Conclusions.

It is my opinion from my study and observation of this aspect of accounting at this company that an excellent job is being done. Continuous co-operation on the part of all departments is required to maintain satisfactory figures to meet all requirements adequately. By having separate sets of control accounts by product groups the actual and standard costs are run side by side with very little trouble. With the personnel situation in industry as it is to-day particular care has to be exercised by both the production department and the timekeeping department. Given reasonably accurate labour charges, stores requisitions and stores deliveries the actual cost system followed in this company is hard to beat. Its best feature possibly is its objectivity and the simplicity with which the figures can be followed through and checked. Admittedly the cost of maintaining the actual cost records is high but their efficiency in meeting government audit requirements more than makes up for this disadvantage. As far as the standard costs are concerned it is my opinion that in these the cost of costing is kept to a minimum. In addition much more easily acceptable figures for inventory purposes are obtained with the standard costs. The standard costs however have the one objection in my opinion of not providing a satisfactory answer to the question "What is it costing us to produce such and such a part". If the answer to this question is required very frequently then the standard costs used as outlined above are in my opinion hardly adequate. This is particularly true on small quantity orders and where prices are adjusted each time to meet competition.

As for the control reports reasonably up to date and adequate information is provided the management. It is here more than anywhere else however that I feel that improvements can be made. The use of budgets for expense control would be very much worth while. Factory expense forms the largest single dollar item of all the cost elements so that it requires adequate control. The company however has expanded considerably the past two or three years and many new developments have taken place. It is not too much to expect then that in the very near future the need for the expense budget will become more obvious and action taken toward its use.

Unfortunately, it was not possible to publish the various forms submitted.—Ed.

(Reproduction of National Poster Design and Slogan)

This is the time when your local welfare fund asks for your annual pledge. You are urged to give not only your money but your vigorous, personal support.

Because we have full employment due to the war, the sick do not suddenly become well. The aged do not become young. The problems of youth do not vanish. On the contrary, needs for social and health services of many kinds are increased due to the war, especially those related to soldiers' families and dependents.

Life won't wait till to-morrow.

Every day in the year, social service agencies combat disease, relieve family difficulties, battle neglect of children, give guidance to young people, fight the waste of precious human resources.

In most Canadian cities, these social services are financed through voluntary contributions to the community welfare fund, financial federation, or community chest—the terms are synonomous. Under whatever name, these organizations are a source of social strength to their city. Canadians of every racial origin, of every economic bracket, work together and give together.

More people take part in the community welfare fund campaign than in any other single community activity.

Those who give are citizens like yourself, in whom the sense of responsibility for the common good is strong. As a Canadian, you are **free** to choose, **free** to give, **free** to be generous and kind. Celebrate your freedom!

SUPPORT YOUR WELFARE FUND

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Textile Plant, Process Costs in a. K. M. Horton ..... May, 1934
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